

In the Claims

1. (Currently amended) A method of testing equipment operatively connected to a
communicating over a plurality of different target media each medium having a protocol,
comprising:

providing, ~~for each of the plurality of different target media~~, a plurality of
communication element types hierarchically representing different communication
elements for the respective protocol;

providing an electronic instrument for operatively connecting to the equipment
over the target medium and operating under control of a software program;

instantiating, by the software program, at least one of the plurality of
communication element types to create a transmit message instance;

instantiating, by the software program, at least one of the plurality of
communication element types to create an expect message instance;

directing, by the software program, the electronic instrument to transmit a
message to the equipment according to the transmit message instance and to receive a
message from the equipment according to the expect message instance; and

comparing the message received from the equipment with expected results to
determine whether expected results were obtained,

wherein each communication element type is being a user-defined data
structure that pertains to a particular layer of the respective protocol, and

wherein at least some communication element types relating to higher layers of
the protocol include references to one or more communication element types relating to
lower layers of the protocol, and

~~wherein the plurality of communication element types are accessible to at least~~
~~one software program for directing communications over the respective target medium.~~

2. (Canceled)

1 3. (Currently amended) A method as recited in claim 1, wherein the step of
2 providing a plurality of communication element types comprises defining one or more of
3 the plurality of communication element types responsive to exchanges allowed by the
4 protocol of the respective target medium.

1 4. (Canceled)

1 5. (Previously presented) A method as recited in claim 1, wherein at least one of the
2 plurality of communication element types defines a structure for transmitting data over
3 the target medium.

1 6. (Previously presented) A method as recited in claim 1, wherein at least one of the
2 plurality of communication element type defines a structure for receiving data over the
3 target medium.

1 7. (Original) A method as recited in claim 1, wherein at least one communication
2 element type is a message type that includes a portion for holding message data
3 associated with instances of the respective message type.

1 8. (Original) A method as recited in claim 7, wherein the message data has a fixed
2 length.

1 9. (Original) A method as recited in claim 7, wherein the message data has a variable
2 length.

1 10. (Previously presented) A method as recited in claim 1, wherein at least one of the
2 communication element types has a fixed portion that is the same for all instances of the
3 communication element type.

1 11. (Canceled)

1 12. (Original) A method as recited in claim 1, wherein the plurality of communication
2 element types includes at least one message type, and each instance of the message type
3 includes a portion for prescribing timing.

1 13. (Previously presented) A method as recited in claim 12, wherein the timing
2 includes a setting for specifying a pre-message gap.

1 14. (Original) A method as recited in claim 12, wherein the timing includes a setting for
2 specifying a pre-word gap.

1 15. (Original) A method as recited in claim 12, wherein the timing includes a setting for
2 specifying a begin message timeout.

1 16. (Original) A method as recited in claim 12, wherein the timing includes a setting for
2 specifying a trailing gap.

1 17. (Currently amended) A method of as recited in claim 1 structuring
2 communications over a communication medium having a known protocol, further
3 comprising, prior to the step of directing:
4 providing a plurality of communication element types for representing
5 communication elements at different layers of the protocol, each communication element
6 type having a user definable structure that pertains to a corresponding layer of the
7 protocol;
8 in a software program, creating an instance of at least one of the plurality of
9 communication element types;
10 varying at least one characteristic of the transmit message instance by in the
11 software program; and
12 operating the software program to direct communications over the
13 communications medium according to the instance with the varied characteristic and to
14 determine a susceptibility of equipment operatively connected to the communication
15 medium to the varied characteristic.

1 18. (Previously presented) A method as recited in claim 17, wherein the at least one
2 characteristic includes a timing characteristic.

1 19. (Currently amended) A method as recited in claim 1 ~~of creating an interface with~~
2 ~~a communication medium having a protocol, further~~ comprising:

3 ~~creating a plurality of user definable communication element types for~~
4 ~~representing communication elements at different layers of the protocol;~~

5 saving the plurality of communication element types in a computer readable
6 format;

7 ~~accessing the saved communication element types by a software program;~~

8 ~~instantiating, via the software program, one or more of the plurality of~~
9 ~~communication element types to create one or more specific instances of communications~~
10 ~~over the communication medium; and~~

11 ~~operating the software program to run the one or more specific instances of~~
12 ~~communications over the communications medium.~~

1 20. (Previously presented) A method as recited in claim 1,

2 wherein the plurality of user-definable communication element types include
3 message types, word types, and field types,

4 wherein at least one message type includes a reference to at least one word type,
5 and

6 wherein at least one word type includes a reference to at least one field type.

1 21. (Previously presented) A method as recited in claim 4, further comprising creating
2 multiple instances of one of the plurality of communication element types.

1 22. (Currently amended~~Previously presented~~) A method as recited in claim 21,
2 further comprising processing each of the multiple instances for exchanging information
3 on the ~~respective-target~~ medium.

1 23. (Currently amended) A method as recited in claim 17, ~~wherein the software~~
2 ~~program is a test program for testing equipment connected to the communication~~
3 ~~medium, the method further comprising creating multiple instances of one of the plurality~~
4 of communication element types in the software test program.

1 24. (Currently amended) A method as recited in claim 23, further comprising,
2 varying characteristics of each of the multiple instances created in the test software
3 program in different ways.

1 25. (Currently amended) A method of communicating over a target medium having a
2 protocol, comprising:

3 providing a plurality of communication element types for representing different
4 communication elements of the protocol, each of the plurality of communication element
5 types being a user-defined able data structure that pertains to a particular layer of the
6 protocol,

7 providing an electronic instrument for operatively connecting to the target
8 medium for communicating over the target medium;

9 providing a software program for controlling the electronic instrument;

10 arranging the plurality of communication element types hierarchically, with at
11 least one communication element type relating to a higher layer of the protocol including
12 a reference to at least one communication element type relating to a lower layer of the
13 protocol,

14 ~~accessing~~ instantiating at least one of the plurality of communication element
15 types by ~~the~~ a software program to create at least one communication element instance;
16 and

17 operating the software program to control the electronic instrument to directing
18 communications over the target medium; responsive to ~~each the accessed~~ communication
19 element instancetype(s), over the target medium using the software program.

20 26. (Currently amended) A method of communicating over a target medium having a
21 protocol, comprising:

1 providing a plurality of message types and word types for representing
2 communications using the protocol, each of the plurality of message types and word types
3 being a user-definable data structure;

4 providing an electronic instrument operatively connecting to the target medium
5 for communicating over the target medium;

6 providing a software program for controlling the electronic instrument;

7 arranging the plurality of message types and word types hierarchically, with at
8 least one message type including a reference to at least one word type;

9 ~~accessing-instantiating the~~ at least one ~~of the plurality of message types and word~~
10 ~~types-by at~~ the software program to create at least one message instance; and

11 operating the software program to control the electronic instrument to directing
12 communications over the target medium, responsive to the ~~accessed-message instancetype~~
13 ~~and/or word type over the target medium using the software program.~~

14 27. (New) A method as recited in claim 1, wherein the step of creating at least one
15 instance of an accessed communication element type comprises the software program
16 accessing a software applications program interface (API).

17 28. (New) A method as recited in claim 1, wherein the step of creating at least one
18 instance of an accessed communication element type comprises the software program
19 accessing a VXI plug-and-play driver.